

Look at Me When You Say That: An Electronic Negotiation Simulation

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This article extends the growing body of research on computer-mediated communication to a negotiations setting. The author compares face-to-face negotiation outcomes with computer-mediated negotiation outcomes using an integrative (win-win) negotiation. There were two main results of interest. First, computer-mediated final agreements are somewhat more integrative than those negotiated face-to-face, suggesting there is no efficiency loss from negotiating long distance using information technology. Second, computer-mediated agreements tend to be significantly more equal than face-to-face agreements.

KEYWORDS: *bargaining; computer mediated; e-mail; face-to-face; integrative; negotiation.*

In the past decade, there has been a severe increase in the extent of business transacted via e-mail or over the World Wide Web. From banking to shopping, transactions that used to be made face-to-face are now being made electronically. As electronic communication becomes more commonplace, businesspeople have begun negotiating electronically as well. Although there is a growing body of research on computer-mediated communication (CMC) (see Sproull & Kiesler, 1991, for a review), there is relatively little on computer-mediated negotiation.¹

This article presents an electronic negotiation simulation that was developed for use in the MBA class to expose students to issues in negotiating electronically. The simulation represents an integrative (win-win) negotiation involving a large personal care products firm and a group of retail stores that would like to carry their products.

This article compares negotiated outcomes from face-to-face and computer-mediated treatments. In the face-to-face treatment, 33 pairs of

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subjects negotiate in person. In the computer-mediated treatment, 44 pairs of subjects negotiate the same case via e-mail.

The results are consistent with previous literature on CMC. First, subjects negotiating via e-mail are somewhat more likely to arrive at integrative (win-win) agreements. Second, the agreements reached with computer mediation involve significantly more equal divisions of the surplus than those reached in a face-to-face context.

The article is organized as follows. The next section briefly reviews the relevant literature from three areas—negotiations, CMC, and computer-mediated negotiation—and discusses potential hypotheses. Then, the negotiations task is presented and the results analyzed. The final section concludes and provides some discussion.

Literature Review and Hypotheses

Negotiation Literature

A large body of literature exists on negotiations, including a number of textbooks (Bazerman & Neale, 1992; Fisher & Ury, 1981; Lewicki, Litterer, Minton, & Saunders, 1997; Murnighan, 1991; Raiffa, 1982; Thompson, 1998), although with the exception of a short section in Thompson (1998), no mention is made of negotiating via computer.

Negotiations are often categorized as distributive (win-lose) and integrative (win-win) (Fisher & Ury, 1981). In a distributive negotiation, the outcome space is unidimensional; one person's gain is another's loss. In an integrative negotiation, however, there exist win-win solutions. Sometimes, one particular outcome is better for both parties than another. Other times, concessions on multiple issues can be traded to yield a pareto improvement. In either case, in an integrative negotiation, creative thinking, equal participation, and information sharing can yield a better outcome for both sides than simply "splitting the pie." The task in this study is an integrative negotiation; one of the variables of interest will be the extent to which negotiators find integrative solutions in the different communication media.

CMC Literature

There is a large and growing body of research investigating the area of CMC. An excellent review can be found in Sproull and Kiesler (1991).² Many studies investigate how the limitation of social interaction when using CMC affects group decisions (e.g., Kiesler & Sproull, 1992; Spears & Lea,

1992; Sproull & Kiesler, 1991; Straus & McGrath, 1994). There are three main empirical regularities from this literature that have implications for our investigation of how people *negotiate* through computers.

First, researchers have found that when groups communicate electronically, they generate more (creative) options for mutual gain (Gallupe, Cooper, Grise, & Bastianutti, 1994; Nunamaker, Dennis, Valacich, & Vogel, 1991). If this regularity were observed in computer-mediated negotiation as well, negotiators would be more creative, generate more options, and generally be more open to new and creative ideas. This could lead to more integrative outcomes when the negotiation occurs via e-mail than when it occurs face-to-face, where a "split the difference" mentality may be more prevalent. This is our first hypothesis (Hypothesis 1a).

Second, studies have demonstrated that computer-mediated discussion leads to less reliance on social cues and more equal participation (Adrianson & Hjelmquist, 1991; Dubrovsky, Kiesler, & Sethna, 1991; Hiltz, Johnson, & Turoff, 1986; Kiesler, Siegal, & McGuire, 1984; Rice, 1987; Weisband, Schneider, & Connolly, 1995). If this regularity persists, one could imagine that this more equal, participatory process could lead to more equal negotiation outcomes. Thus, negotiation outcomes may be more equal (the surplus from the negotiation will be divided more equally) when negotiated via e-mail than when negotiated face-to-face; this is our second hypothesis (Hypothesis 2a).

Finally, groups using CMC take more time to reach agreements than groups in face-to-face discussions (possibly because of the lack of social cues, or possibly for logistical reasons; typing is slower than speaking, and electronic communication is often asynchronous) (Hiltz et al., 1986; Kiesler & Sproull, 1991; Valacich, Paranka, George, & Nunamaker, 1993). Although this result does not suggest any hypothesis, it does have implications for our design. In particular, it will be important to allow enough time for the e-mail negotiators to arrive at an agreement.

Computer-Mediated Negotiation Literature

A smaller literature examines the interface between negotiations and CMC. One type of research outlines and describes negotiation support systems (NSS). These are systems that help negotiators to prepare for negotiations, suggest strategies and tactics to use during a negotiation, and sometimes propose jointly beneficial solutions.³

A second type of research compares negotiating behavior between various communication media, a more relevant field of inquiry to this article.⁴ These articles are described in greater detail below.

The effect of visual and audial access. The five articles summarized in this subsection all study the effect of video and audial access on how subjects bargain, although none uses electronic communication. However, because electronic communication involves a lack of visual and audial access, results from these studies may help to predict behavior in our experiment.

In Wichman (1970), subjects play a finitely repeated prisoner's dilemma game (data from 70 repetitions are analyzed). In one treatment, subjects are completely isolated; in another, they can see but not hear each other; in a third, they can hear but not see each other; and in a fourth, they can both see and hear each other. The median level of cooperation in the four treatments (respectively) was 40.7%, 47.7%, 72.1%, and 87.0%. Results thus suggest that the move from face-to-face negotiation to computer-mediated negotiation (which involves no visual or audial access) may decrease cooperation and thus integrative solutions. This is the opposite prediction from our first hypothesis above and is thus used as an alternative hypothesis (Hypothesis 1b).

In Lewis and Fry (1977), in contrast, subjects negotiated an integrative case either face-to-face or with a barrier between them. In addition, orientation is manipulated; some subjects are told to try to earn the most for themselves, whereas others are told to approach the negotiation as a problem-solving exercise. The authors find that the problem-solving-oriented subjects performed the same with and without the barrier. However, the individual orientation subjects who negotiated with a barrier were significantly less likely to reach an impasse, achieved significantly higher joint profits, and used significantly fewer distributive tactics. Results from this article suggest that a lack of video access (as is found via e-mail) may increase cooperation and integrativeness, supporting our first hypothesis introduced previously (Hypothesis 1a).

In both Carnevale, Pruitt, and Seilheimer (1981) and Carnevale and Isen (1986), subjects participate in an integrative bargaining task. In some treatments, they negotiate face-to-face; in others, a physical barrier is imposed to remove visual access, although subjects could still talk to each other. In addition, accountability is manipulated (Carnevale et al., 1981) or affect induced (Carnevale & Isen, 1986). Results from both articles suggest that negotiators who were prevented from seeing each other achieved more integrative outcomes from the negotiation than negotiators who were able to see each other. In addition, the authors analyze process data from the experiment. In Carnevale et al., subjects who were separated by the barrier exchanged more information and experienced and reported a more positive atmosphere. In Carnevale and Isen, subjects who were separated by the barrier used significantly fewer contentious tactics and made significantly more integrative statements. Results from these studies suggest that subjects in the computer-mediated

negotiation treatment (which involves no visual access) may arrive at more integrative solutions than subjects in the face-to-face treatment. This is more evidence in support of our first hypothesis (Hypothesis 1a).

In Valley, Moag, and Bazerman (1996), subjects participate in a distributive negotiation with asymmetric information (the classic “acquire a company” problem of Samuelson & Bazerman, 1985).⁶ The authors add communication to this problem by allowing the buyer and seller to negotiate freely over the price of the good. In Study 1, some dyads negotiated face-to-face, whereas others negotiated in writing. The authors find that there are significantly more “no agreement” outcomes in the written negotiations (41.3%) than in face-to-face negotiations (5.4%). In Study 2, the authors compare face-to-face, telephone, and written communication. The authors find significantly higher impasse rates in written negotiations (51.9%) than either face-to-face (19%) or phone (14.3%) negotiations. Results from this study suggest that written (and thus, perhaps, e-mail) communication may increase the proportion of no agreements. This is our third hypothesis (Hypothesis 3).

The effect of computer-mediated negotiation. Relatively few studies compare negotiation between face-to-face and computer-mediated treatments.⁵ In Arunachalam and Dilla (1992, 1995) subjects negotiated a three-party integrative task. Their study involves a 2×2 design, face-to-face versus e-mail negotiation and the use of a group decision technique. In their study, each group of three negotiated three times together, switching roles. Their results suggest that computer-mediated groups had less integrative and more unequal agreements than those that negotiated face-to-face, supporting our alternative hypothesis (Hypothesis 1b). However, this design involves one particularly problematic feature: All groups had 25 minutes to unanimously reach an agreement, regardless of treatment, or else receive zero points, an outcome that was lower than the lowest number of points that they could have obtained through any negotiated agreement. Because previous research demonstrates that electronic communication is significantly slower than face-to-face communication (Hiltz et al., 1986; Kiesler & Sproull, 1991; Valacich et al., 1993), this time limit may have forced electronic groups to come to an agreement (*any* agreement) before the issues had been completely addressed, leading to less integrative outcomes in that treatment. Unfortunately, the authors do not report disagreement rates in their three treatments. In contrast in our study, subjects negotiating by e-mail had 2 weeks to complete the negotiation, obviating concerns over time constraints.

In Rangaswamy and Shell (1997), the authors compare outcomes from an integrative negotiation that was negotiated in three different media: face-to-face, via e-mail, and via the NSS developed by the authors, NEGOTIATION

ASSISTANT. No time limit was imposed on the subjects. Of interest to us are the face-to-face and e-mail comparisons. In contrast to the previous results, the authors find no significant differences in the integrativeness of outcomes between face-to-face and e-mail negotiations.

A few unpublished studies have also investigated this issue. For example, D. M. Moore (personal communication, 1998) reports finding no significant differences between face-to-face and e-mail negotiation outcomes. Barsness and Tenbrunsel (1998) also find no differences in the integrativeness of negotiation outcomes between alternative media, although they do find significantly higher impasse rates in computer-mediated negotiation. These last three studies lead to our third hypothesis (Hypothesis 1c) of no significant difference between the treatments.

Hypotheses

Results from this previous literature suggest varying hypotheses to test. Clearly, one important question is the extent to which CMC hinders or encourages the formation of integrative agreements. The previous literature presents three alternative hypotheses that data from this study will attempt to distinguish.

First, previous research in CMC suggests that it may facilitate options generation (Gallupe et al., 1994; Nunamaker et al., 1991), which would presumably lead to more integrative agreements. In addition, experimental research by Lewis and Fry (1977), Carnevale et al. (1981), and Carnevale and Isen (1986) suggests that subjects who negotiate without visual access achieve more integrative solutions than those with visual access. Thus, our first hypothesis:

Hypothesis 1a: Subjects who negotiate via e-mail will achieve significantly more integrative agreements than subjects who negotiate face-to-face.

The alternative hypothesis is just the opposite. Other experimental work has observed reduced cooperation in no-visual-access treatments (Wichman, 1970). Arunachalam and Dilla (1995) also found that subjects negotiating via e-mail were significantly less integrative than those negotiating face-to-face. This leads to our alternative hypothesis:

Hypothesis 1b: Subjects who negotiate via e-mail will achieve significantly less integrative agreements than subjects who negotiate face-to-face.

Finally, our third alternative hypothesis is that of no difference in integrativeness between treatments. This result was found by Rangaswamy and

Shell (1997) in their experiment, as well as by Moore (personal communication, 1998) and Barsness and Tenbrunsel (1998).

Hypothesis 1c: Subjects who negotiate via e-mail will achieve equally integrative agreements as subjects who negotiate face-to-face.

Whereas the first set of hypotheses describes the efficiency of agreements, the second describes the equity of agreements. Again, previous research in this area is mixed, leading to multiple alternative hypotheses.

From the CMC literature, we know that participation is more equal than in face-to-face interactions (Sproull & Kiesler, 1991). This suggests that e-mail negotiations may conclude with a more equal division of surplus than face-to-face negotiations.

Hypothesis 2a: Subjects who negotiate via e-mail will achieve significantly more equal division of the surplus than subjects who negotiate face-to-face.

However, in previous negotiation studies, researchers have found more unequal divisions of surplus in computer-mediated negotiation (Arunachalam & Dilla, 1995). Thus, we will test our alternative hypothesis:

Hypothesis 2b: Subjects who negotiate via e-mail will achieve significantly less equal division of the surplus than subjects who negotiate face-to-face.

Our final hypothesis is generated from the experiment of Valley et al. (1996) and Barsness and Tenbrunsel (1998). The authors found significantly more impasses in a negotiation conducted via phone or e-mail than face-to-face.

Hypothesis 3: Subjects who negotiate via e-mail will achieve significantly higher rates of disagreement than subjects who negotiate face-to-face.

The next section describes the negotiation task and the data collected to distinguish between these hypotheses.

The Negotiation Task

Subjects were students at an eastern business school enrolled in a negotiations course. All students negotiated this simulation as a part of their course requirement and were graded on its outcome.

In the face-to-face treatment, 33 pairs of subjects negotiated with each other. They were presented with the simulation and the name of their counterpart and told to take as much time as they needed to negotiate the outcome. Agreements were due approximately 4 days later. In the computer-mediated treatment, 44 pairs of subjects negotiated the same simulation via e-mail. Subjects were presented with their simulation and the name and e-mail address of their counterpart. Due to the asynchronous nature of e-mail communication, they were given 2 weeks to complete the negotiation and turn in their agreements.

The simulation negotiated involves a marketing agreement between a producer and a retail-buying group and is available from the author on request. In the negotiation, one side assumes the role of an account manager in the hygiene-toiletries division of a firm (the producer), and the other assumes the role of a buyer (the retail-buying group). Negotiators are given some shared information about the nature of the industry and the history between the two parties. In particular, they are told of the importance of each party to the other.

The negotiation involves seven areas to be decided: long-term quantity discounts, terms of payment, short-term promotional discounts, cooperative advertising the two can engage in together, the amount of shelf space, the acceptance of new product, and the end-of-aisle display that could be given to the new product.

Negotiators are given private information about their preferences over these items. In addition, they are given a scoring sheet that describes the value to them of each possible outcome on each of these items in thousands of dollars. Some of these values are positive (as when the producer obtains an increase in shelf space) and others negative (as when the retailer receives a lower quantity discount).

A bird's-eye view of the scoring sheets reveals that the simulation involves two issues of congruent interest; both sides want the retailer to carry the new product and to designate an end-of-aisle display to it. Of the remaining five issues, there are numerous trade-offs that can benefit both sides if they are found via information sharing and creativity. Figure 1 presents the graph of the pareto frontier and of outcomes in this simulation.

Results

Description

Of the 33 dyads that negotiated face-to-face, all reached an agreement. Of the 44 dyads that negotiated via e-mail, 42 reached an agreement. The

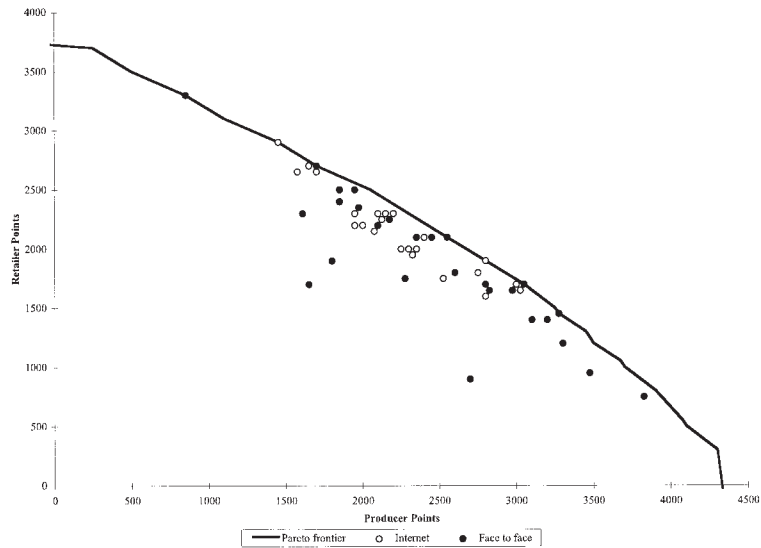


FIGURE 1: Agreements and the Pareto Frontier

disagreement rate between the two treatments is not significant ($t = 1.45$, $p = .1509$), although it is in a direction consistent with our Hypothesis 3 and previous results of Valley et al. (1996).

Figure 1 presents a description of the outcome of these negotiations by graphing the total number of points earned by each dyad in the face-to-face and computer-mediated treatments. Agreements that lie farther out (toward the northeast quadrant) are more integrative.⁷

Pareto Efficiency (integrativeness)

To statistically analyze these results, the total number of points earned by each dyad in the two treatments is compared. A higher number of points imply a more integrative agreement. A two-tailed heteroskedastic t test finds suggestive but not significant differences between the two treatments, with the computer-mediated treatment being somewhat higher than the face-to-face treatment. This difference is significant only at the 10% level ($t = 1.733$, $p = .0873$). This result suggests electronic communication may increase integrativeness, weakly supporting our Hypothesis 1a.

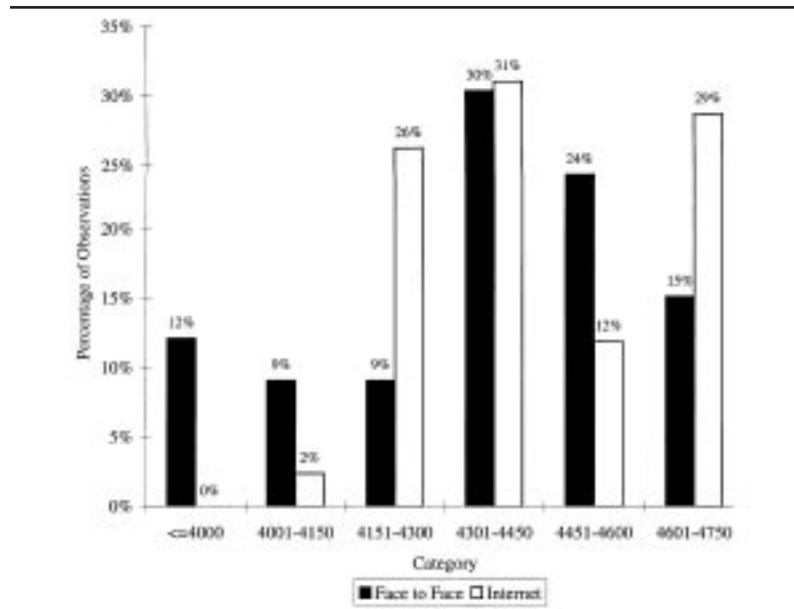


FIGURE 2: Total Points

Figure 2 graphs the distribution of total points earned in each treatment. Although agreements at the upper end of the tail are similar in the two treatments, a number of dyads in the face-to-face treatment earned fewer than 4,000 points together.

Equality of Outcomes

Perhaps the most interesting result from this study is the investigation of equality of outcomes. For each pair, the absolute value of the difference in points earned by the two players is calculated. A two-tailed heteroskedastic t test confirms that the distribution of absolute differences is significantly lower for computer-mediated dyads than for face-to-face dyads ($t = 2.332$, $p = .0225$). This result provides strong support for our Hypothesis 2a and allows us to reject its alternative (Hypothesis 2b).

In particular, we find that computer-mediated negotiation leads to more equal outcomes. Some reasons for this result are suggested in the concluding section below.

Conclusions, Discussion, and Implications

In this study, we compare negotiation outcomes between pairs of students negotiating an integrative task either face-to-face or via e-mail. The impact of communication media on integrativeness and equality of the outcome is analyzed.

Outcomes are found to be somewhat more integrative in the e-mail treatment, although that difference was only marginally significant. This result is in direct contrast to Arunachalam and Dilla (1995), in which outcomes were less integrative when negotiated via CMC. It is speculated that this difference was caused by the time factor. In Arunachalam and Dilla, all subjects were constrained to complete their negotiation in 25 minutes. Because electronic communication is slower than verbal communication (Hiltz et al., 1986; Kiesler & Sproull, 1992; Valacich et al., 1993), this probably led to an important limitation on the electronic groups. In contrast, in this study, subjects were allowed 2 weeks to complete their electronic negotiation, which likely compensated for the relative slowness and asynchrony of the medium.

This study also finds that the e-mail treatment results in significantly more equal outcomes than the face-to-face treatment. This result is consistent with previous literature in CMC that demonstrates a lack of social cues and more equal participation when communication is done via computer than face-to-face. In particular, the electronic medium "levels the playing field" between stronger and weaker negotiators.

For example, a negotiator who is less "fast on his feet" is relieved of the burden of making spot decisions in an electronic negotiation. He has the opportunity to consider his counterpart's proposals carefully and at his own pace. This is likely to improve his position relative to the quick-thinking negotiator and equalize the profits. Similarly, a less "smooth" negotiator can take time to carefully compose his messages in the electronic negotiation rather than having to blurt out the first thing that comes to mind. Many confrontational negotiation tactics (e.g., flustering your opponent, demanding immediate reasons and answers, etc.) are simply not effective via e-mail. Thus, agreements that were unequal due to those tactics in the face-to-face condition would be more equal in the e-mail condition.

These results have important implications for the choice of whether to use computer-mediated negotiation.⁸ For example, if an individual's negotiation success is due to quick thinking, choosing to move to an electronic forum for negotiating may eradicate their advantage without necessarily resulting in a more integrative solutions.

The next step in this research agenda is to analyze the process (and not just the outcome) of these negotiations. Such a process analysis is already underway in a related study (Zwick & Croson, 1999) in which electronic negotiation is used to compare negotiation tactics and outcomes cross culturally.

This article adds to the growing body of empirical evidence on CMC and negotiation. Its results have implications for the choice of media over which one should negotiate as well as recommendations of what to expect when negotiating via e-mail as opposed to face-to-face.

Notes

1. Exceptions are discussed in the Literature Review section.
2. For some recent examples of the literature in this area, see Arrow (1997); Marakas and Elam (1997); Reid, Malinek, Stott, and Evans (1996); and Hightower and Sayeed (1996).
3. For example, Jarke, Jelassi, and Shakun (1987) describe their particular NSS (MEDIATOR) and demonstrate its use for a group car-buying decision. In Rangaswamy, Eliashberg, Burke, and Wind (1989) and Eliashberg, Gauvin, Lilien, and Rangaswamy (1992), their particular NSS (NEGOTEX) is described and tested. Jelassi and Foroughi (1989) review and compare six different NSS.
4. Carnevale and Probst (1997) provide a theoretical discussion of what negotiating behaviors one might expect will change when communication becomes computer mediated.
5. Two other interesting articles investigate the effect of group identification on an electronic integrative negotiation (Moore, Kurtzberg, Thompson, & Morris, 1997) as well as the effect of culture on an electronic integrative negotiation (Gelfand & Christakopoulou, 1998). However, no comparison is made across different media in either of these articles.
6. In this problem, the underlying value of the good (V) is known to the seller; the buyer knows only that it is drawn from a uniform distribution ($\$0$ - $\$100$). Both sides know that the value of the good to the buyer is 1.5 times that to the seller ($1.5V$). The problem becomes finding a price that is acceptable to both sides.
7. Some agreements in each treatment are identical; these are graphed together.
8. For a complete discussion of the attributes of this choice, see Blecherman (1998).

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